

## ABSTRACT

The use of a stack, in a microinstruction sequencer of a microprocessor, to redirect a sequence of microinstructions or to provide parameter passing is disclosed. In an embodiment the microinstruction sequencer stack comprises an array of memory cells and control logic and is coupled to receive data and control values from microinstruction sequencing logic and/or the microprocessor core. In another embodiment in accordance with the invention, a microprocessor includes a microinstruction sequencer including an array of memory cells dedicated to the microinstruction sequencer, an address multiplexer coupled to the array of memory cells, sequencing logic coupled to the address multiplexer and to the array of memory cells, and a microprocessor core unit coupled to the array of memory cells. In an embodiment for a method of the invention, a method of directing the sequence of execution of microinstructions during a call to and return from a subroutine includes receiving a microinstruction at a microinstruction sequencing logic, pushing a value in a field of the microinstruction onto a microinstruction sequencer stack, executing the subroutine, popping the value from the microinstruction sequencer stack to a microinstruction address multiplexer, and returning to the return address of the subroutine by sequencing the value from the address multiplexer to a microinstruction sequencer.